

EXHIBIT A

MARK N. HORENSTEIN, Ph.D., P.E.
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Areas of Expertise

Analog and Digital Circuits, Design, Semiconductor Devices, Applied Electromagnetics, Power Electronics, Electrostatic Processes, Alternative Energy

Education

Massachusetts Institute of Technology Ph.D. Electrical Engineering 1978
 (Electric Power Systems Engineering Laboratory)

University of California at Berkeley M.S. Electrical Engineering 1975
 (Solid State Optics Laboratory)

Massachusetts Institute of Technology S.B. Electrical Engineering 1973

Employment History

Boston University

Professor, Dept. of Electrical and Computer Engineering	2000 - present
Associate Chair for Undergraduate Programs - ECE Department	2011-2015
Associate Dean for Graduate Programs and Research, Engineering	1999 - 2007
Associate Professor, Dept. of Electrical and Computer Engineering	1985 - 2000
Assistant Professor, Dept. of Electrical and Computer Engineering	1979 - 1985

Spire Corporation

Research Scientist in High-Voltage Pulsed-Power Division	1978 - 1979
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Professional Affiliations

Institute of Electrical and Electronic Engineers (Elevated to IEEE Fellow “for contributions to the modeling and measurements of electrostatics in industrial processes.”)
 Registered Professional Engineer - Electrical (Commonwealth of Massachusetts)
 National Association of Radio and Telecommunications Engineers (Certified Electrostatic Discharge Engineer)
 Electrostatics Society of America (Past President and Life Member)
 Journal of Electrostatics (Editor Emeritus)

Current Research Activities

Self-Cleaning Solar Panels via Electrostatic Electrodynamic Screen
 Ultra-Sensitive Low-Noise Electric Field Mill
 High-Voltage Multiplexing Circuit for Large-Array MEMS Mirrors

Teaching Experience

Electric Circuits, Electronics, Power Electronics, Electromagnetics, Engineering Design

Prior Expert Witness & Litigation

Summary:

As of 12/1/ 2017: 49 Cases, 33 Depositions, 6 Jury Trials, 5 ITC Cases, 3 Bench Trials

Reports Filed and/or Expert Testimony Given:

(Law Firm, Principal Attorney)

Monolithic Power Systems, Inc. v. O2 Micro International Ltd.

U.S. District Court for the Northern District of California. Civil Action No. 04CV2000 and 06CV2929

Matter: Integrated Circuits for Driving CCFLs

Worked on behalf of Defendant Monolithic Power Systems

Status: Jury finding in favor of MPS, based in part on my testimony

UPI v. Richtek Corp.

U.S. International Trade Commission Inv. No. 337-TA-698

Matter: Integrated Circuits for Power Applications

Worked on behalf of Richtek USA

Expert reports, deposition, testimony at hearing

Status: Decision in favor of Richtek, based in part on my testimony

O2 Micro International v. Hon Hai Precision Industry Co., et al

U.S. District Court for the Eastern District of Texas

Matter: Integrated Circuits for Driving CCFLs

Worked on behalf of Defendant Hon-Hai

Status: Summary judgment granted in favor of Hon Hai, based in part on my testimony

Philips v. Wangs Alliance Corporation

Matter: LED Lighting Circuits

Working on behalf of WAC

Status: Settled

LED Tech Development v. Samsung Electronics

Request for *Inter Partes* Review of US Patent 6,488,390

Matter: Circuits for maintaining constant flashlight illumination with battery discharge

Worked on Behalf of Requestor Samsung

Expert declarations, claim construction declaration

Superior Communications v. Voltstar Technology

Request for *Inter Partes* Review of U.S. Patent 7,910,833

Matter: Energy -Saving Chargers and Power Adapters

Working on behalf of Requestor Superior

Status: In Progress

Hopkins Manufacturing v. Ceuqent Performance Products

Request for *Inter Partes* Review of US Patents 6,012,780, 6,068,352, and 6,445,993

Matter: Electronic Brake Controllers for Vehicle Trailers

Worked on behalf of Requestor Hopkins: Expert declarations, deposition

Status: Settled

IV v. Ricoh, Inc.

Matter: Scanners and Copiers

Worked on behalf of Plaintiff Intellectual Ventures

Claim construction briefs, expert reports on infringement and validity, deposition

Status: Pre-trial settlement

IV v Canon Inc.

Matter: Scanners and Copiers Re: US Patents

Worked on behalf of Plaintiff Intellectual Ventures

Claim construction briefs, expert reports on infringement and validity, deposition

Status: Pre-trial settlement

Global Touch v. Microsoft et al

Request for *Inter Partes* Review of Multiple US Patents, (e.g.: US Patent 7,994,726, IPR2015-01147; US Patent 7,498,749, IPR 2015-01148; US Patent 7,329,970, IPR2015-01149)

Matter: Touch-sensitive and proximity switches

Worked on Behalf of Requestor Microsoft

Expert declarations, claim construction declarations, depositions.

Status: Institution on majority of IPR requests

Broad Ocean LLC v. Nidec Corp

Request for *Inter Partes* Review of US Patent 7,990,092

Matter: HVAC Controls

Worked on Behalf of Patent Owner Nidec

Expert declaration, deposition.

Status: Pending

OS. Security v. BRK Brands

U.S. District Court for the Central District of California

Matter: Circuits for Electronic Safe Locks

Worked on Behalf of Defendant BRK Brands

Expert report.

Status: Settled in favor of BRK Brands. Feedback was that my input and argument was key to timely settlement.

Shenzhen El Lighting Technology v. Surefire Electrical Corp.

Request for *Inter Partes* Review of US Patent 7,671,279

Matter: "Current-See" Cables for Mobile Device Chargers

Worked on Behalf of Requestor Surefire
Expert declarations, claim construction declaration
Status: Pending

ITRI v. LG Electronics
U.S. District Court of New Jersey
Matter: DVD Read and Write Heads
Worked on behalf of Defendant LG Electronics
Expert reports; claim construction declarations.
Status: Pre-trial settlement

ITRI v. LG Electronics
Request for *Inter Partes* Review of US Patent 7,672,198
Worked on Behalf of Requestor LG Expert declarations

L-3 Communications v. Jaxon Engineering
District Court of Colorado
Matter: Circuits for producing High-Voltage Pulses for HEMP Testing
Worked on behalf of Defendant Jaxon
Expert report, deposition
Status: Pre-trial settlement

Re Matter of the Fort Totten Metrorail Cases Arising Out of the Events of June 22, 2009
United States District Court for the District of Columbia
Natl. Transportation Safety Board Accident Number DCA-09-MR-007
Matter: Audio Track Detection Circuits
Worked on behalf of Defendant Ansaldo
Expert reports, deposition
Status: Pre-trial settlement

Server Technology, Inc. v. American Power Conversion Corporation,
United States District Court, District Of Nevada
Matter: Intelligent Power Distribution Units
Worked on behalf of Defendant American Power Corporation
Expert reports, deposition, testimony at trial
Status: Mixed finding

Clearwater Dolphin Corp. v. Evapco, Inc.
U.S. District Court for the District of Connecticut C3:05cv507 (SRU)
Matter: Electrical Water Treatment Devices
Worked on behalf of Plaintiff Clearwater Dolphin
Status: Summary judgment granted in favor of Evapco

Pass & Seymour v. Shanghai Meihao Electric Inc. et al.
U.S. International Trade Commission Inv. No. 337TA615
Matter: Ground Fault Circuit Interrupters (GFCIs)

Worked on behalf of Respondent Shanghai Meihao
Status: Hearing Completed in favor of P&S

Pass & Seymour v. Hubbell Inc. et al.
United States District Court Northern District of New York 5:07Cv00945
Matter: Ground Fault Circuit Interrupters (GFCIs)
Worked on behalf of Defendant Hubbell
Status: Settled

Qimonda AG v. Seagate Technology, et al.
U.S. International Trade Commission Inv. No. 337TA665
Matter: Circuits for computer circuitry
Worked on behalf of Defendant Seagate
Status: Hearing Completed; finding in favor of Seagate, based in part on my testimony

Bushnell Inc., et al. v. The Brunton Company
Preliminary Injunction Hearing: US District Court for the District of Kansas No. 2:09cv2009 KHV/JPO
Matter: Laser Range Finders
Worked on behalf of Plaintiff Bushnell
Status: Injunction Granted, based in part on my testimony

Technical Witts, Inc. v. Skynet Electronic Co., Ltd, et al.
US District Court for the District of Arizona. CV042025PCTMHM
Status: Summary Judgment Granted in favor of Skynet
Matter: Switching Power Supplies
Worked on behalf of Defendant Skynet

Belden Technologies and Belden CDT v. Superior Essex/ Superior Essex Commun.
Court for the District of Delaware 1:08cv0063SLR
Matter: Data Communication Cables
Worked on behalf of Plaintiff Belden
Status: Jury Trial Completed; mixed finding

Motorola v. Research in Motion
U.S. International Trade Commission, Inv. No. 337TA706
Matter: Battery Charging Circuits
Worked on behalf of Defendant Motorola; Status: Settled

LINQ Industrial Fabrics vs. Intertape Polymer,
Court for the District of Tampa.
Matter: Electrostatics of Flexible Intermediate Bag Containers (FIBC)
Worked on behalf of Plaintiff LINQ
Status: Jury Trial Completed in favor of LINQ, based largely on my testimony

Thompson v BenQ,

U.S. International Trade Commission.

Matter: Switching power supplies and ac-to-dc power converters.

Worked on behalf of Defendant BenQ

Status: Hearing Completed in favor of BenQ, based largely on my testimony

Power Integrations v. ST-Microelectronics,

U.S. International Trade Commission.

Matter: Switching power supplies and ac-to-dc power converters.

Worked on behalf of Defendant STMicro

Status: Hearing Completed in favor of Power Integrations

Clearwater Dolphin Corp. v. Evapco, Inc.

U.S. District Court for the District of Connecticut – Trade Secret deliberation

Matter: Electrical Water Treatment Devices

Worked on behalf of Plaintiff Clearwater Dolphin

Status: Summary judgment granted in favor of Evapco

MKS vs American Power

US District Court of Delaware

Matter: Electrical matching network power supplies.

Worked on behalf of plaintiff MKS

Status: Jury Trial Completed in favor of MKS, based in part on my testimony

WorldHeart vs. Abiomed

US District Court of Delaware – Trade Secret Litigation

Matter: Power conversion for total artificial human heart.

Worked on behalf of Defendant Abiomed.

Status: Jury Trial Completed in favor of Abiomed, based largely on my testimony

Research Grants (Under Boston University)

In-Air Electric-Field Sensor Circuit for Airborne Applications - U.S. Navy STTR Phase I: N68335-15-C-0271 via White River Technologies. (Subject: Electric Field-Mill UAV Sensor)

Development of Prototype Self-Cleaning Solar: Massachusetts Clean Energy Center
(Subject: Self-Cleaning Solar Collectors)

Self-Cleaning Solar Panels: US–Israel Binational Science Foundation
(Subject: Self-Cleaning Solar Collectors)

Enhancement of Optical Efficiency of CSP – U.S. Dept. of Energy
(Subject: Self-Cleaning Solar Collectors)

Compact Low-Power Driver for Deformable Mirror – NASA via Boston Micromachines
(Subject: High Voltage MEMS Driver for Adaptive Optics)

Technical Consultations

Boston Micromachines (MEMS circuit design)
Griswold, Inc. (HVAC water treatment device design)

Publications

Books:

M. N. Horenstein, *Design Concepts for Engineers*, 5th Ed., Upper Saddle River, NJ: Prentice Hall, 2015.

M. N. Horenstein, *Microelectronic Circuits and Devices*, 2nd Ed. Upper Saddle River, NJ: Prentice Hall, 1995

Journals Articles:

Sayyah A, Horenstein MN, Mazumder MK, Ahmadi G, "Electrostatic Force Distribution on an Electrodynamic Screen," *Journal of Electrostatics* 81:24-36 Jun 2016

Sayyah A, Horenstein MN, Mazumder MK, "A Comprehensive Analysis of the Electric Field Distribution in an Electrodynamic Screen, *Journal of Electrostatics* 76:115-126 Aug 2015

Mazumder MK, Stark JW, Heiling C, Liu M, Bernard A, Horenstein MN, Garner S, Lin HY, "Development of Transparent Electrodynamic Screens on Ultrathin Flexible Glass Film Substrates for Retrofitting Solar Panels and Mirrors for Self-Cleaning Function, *MRS Advances* 1(15):1003-1012 2016

Dai S, Knepper RW, Horenstein MN, " 300-V LDMOS Analog-Multiplexed Driver for MEMS Devices, " *IEEE Transactions On Circuits And Systems I-Regular Papers* 62(12):2806-2816 Dec 2015

A. Sayyah, M.N. Horenstein, M.K. Mazumder, "Energy yield loss caused by dust deposition on photovoltaic panels", *Solar Energy*, v 107, p 576-604, Sept. 2014.

M. N. Horenstein, M. K. Mazumder, R. C. Sumner, J.W. Stark, T. Abuhamed, R. Boxman, "Modeling of trajectories in an electrodynamic screen for obtaining maximum particle removal efficiency", *IEEE Transactions on Industry Applications*, v 49, n 2, p 707-13, March-April 2013.

Klausner, A., Trachtenberg, A.; Starobinski, D.; Horenstein, M., "An Overview of the Capabilities and Limitations of Smartphone Sensors", *Int.. Jour of Handheld Computing Research*, v 4, n 2, p 69-80, April-June 2013

Mazumder, M. Horenstein, M.N.; Stark, J.W.; Girouard, P.; Sumner, R.; Henderson, B.; Sadler, O.; Hidetaka, I.; Biris, A.S.; Sharma, R., "Characterization of Electrodynamic Screen Performance for Dust Removal from Solar Panels and Solar Hydrogen Generators", *IEEE Transactions on Industry Applications*, v 49, n 4, p 1793-800, July-

Aug. 2013

Horenstein, M.N., Mazumder, M.; Sumner, R.C., Jr., "Predicting particle trajectories on an electrodynamic screen - theory and experiment" *J. of Electrostatics*, v 71, n 3, p 185-8, June 2013

Mazumder, M.; Horenstein, M.N.; Stark, J.W.; Girouard, P.; Sumner, R.; Henderson, B.; Sadder, O.; Hidetaka, I.; Biris, A.S.; Sharma, R. "Characterization of Electrodynamic Screen Performance for Dust Removal from Solar Panels and Solar Hydrogen Generators" *IEEE Transactions on Ind. Applications*, Volume: 49, Issue: 4, 2013

Horenstein, M.N.; Sumner, R.; Miller, P.; Bifano, T.; Stewart, J.; Cornelissen, S., "Ultralow-power multiplexed electronic driver for high resolution deformable mirror systems", *Proceedings of the SPIE* v 7930, p 79300M, 2011.

Horenstein, M.N., A Simulation Model for Understanding Propagating Brush Discharges: Comparison of Theory and Experiments, *IEEE Trans. on Ind. Applications*, 47(1), 2011, 344 - 349.

Mazumder, M.K., Srirama, P.K., Sharma, R; Biris, A.S., Hidetaka, I, Trigwell, S, Horenstein, M.N, Lunar and Martian Dust Dynamics, *IEEE Industry Applications Magazine*, 16 (4), 2010, 14-21.

M. Horenstein, Electrostatics of Nanoparticles: What's the Same, What's different? *Journal of Electrostatics*, 67 (2-3), May 2009, pp 384-393

M. Horenstein and M. Datta, "The Electrostatics of Charged Insulating Sheets Peeled From Grounded Conductors", *J. of Physics: Conference Series* 142 (2008) 012076 (refereed publication)

T. Sugimoto, K. Nonaka, and M. Horenstein, "Bidirectional electrostatic actuator operated with charge control" *Journal of Microelectromechanical Systems*, v 14, n 4, Aug. 2005, p 718-24.

J. C. Crager and M.N. Horenstein, "Distributed Parameter Model for Computing Energy Dissipation in Brush-Type Electrostatic Discharges," *Journal of Electrostatics*, 63 (2005), 239-247.

J.C. Crager and M.N. Horenstein, "Measurement of Optical Intensity and Fluence Generated by Spark Discharges", *Electrostatics 2003: Institute of Physics (UK) Conf. Series*, (178)149-154 2004

Patents:

P. Horn, M. Horenstein, and D. Parent. "Air Distributing and Ionizing Systems."

(US Patent 5,491,602)

M. Horenstein, "Method and Apparatus for Detecting Leaks in Electrically-Insulative Protective Articles such as Condoms, Surgical Gloves, and the Like Using Gaseous Electrostatic Ions." (US Patent 5,455,507)

Jackson and M. Horenstein, "Nasopharyngealometric Apparatus and Method" (US Patent 5,316,002)

T. Bifano and M. Horenstein, "MEMS-based spatial-light modulator with integrated electronics"(US Patent 6,529,311)

Method for Linearizing Deflection of a MEMS Device Using Binary Electrodes and Voltage Modulation (US Patent 7385268)